What is claimed is:

1. A method for establishing a link between network devices comprising the steps of:

transmitting a first message advertising a first set of capabilities;

attempting to establish a link according to the first set of capabilities;

failing to establish a link according to the first set of capabilities;

downgrading the first set of capabilities to a second set of capabilities;

transmitting a second message advertising the second set of capabilities; and

attempting to establish a link according to the second set of capabilities.

2. The method of claim 1, wherein the first set of capabilities includes 1000 BASE-T operations.

3. The method of claim 1, wherein the first set of capabilities includes 100 BASE-T operations.

4. The method of claim 1, wherein the first set of capabilities includes full-duplex operations.

5. The method of claim 1, wherein the first set of capabilities includes half-duplex operations.

6. A method for auto-negotiating a set of link capabilities, the method comprising the steps of:

advertising a first set of capabilities;

downgrading the first set of capabilities to a second set of capabilities; and

advertising the second set of capabilities.

7. The method of claim 6, wherein the first set of capabilities includes 1000 BASE-T operations.

8. The method of claim 6, wherein the first set of capabilities includes 100 BASE-T operations.

9. The method of claim 6, wherein the first set of capabilities includes full-duplex operations.

10. The method of claim 6, wherein the first set of capabilities includes half-duplex operations.

11. The method of claim 6, further comprising the steps of;

downgrading the second set of capabilities to a third set of capabilities; and

advertising the third set of capabilities.

12. The method of claim 6, further comprising the steps of;

establishing a highest common denominator of capabilities in response to advertising the second set of capabilities.

13. A single monolithic integrated circuit comprising:

a gigabit transceiver that generates gigabit speed communications;

a 100 megabit transceiver that generates 100 megabit speed communications; and

an auto-negotiation means for advertising capability of the gigabit transceiver and then advertising capability of the 100-megabit transceiver.

14. A single monolithic integrated circuit comprising:

a gigabit transceiver that generates and transmits information at gigabit speed;

a 100 megabit transceiver that generates and transmits information at 100 megabit speed; and

an auto-negotiation circuit coupled to the gigabit transceiver and to the 100 megabit transceiver, the auto-negotiation circuitry advertising the gigabit transceiver and advertising the 100 megabit transceiver.

15. A method for auto-negotiation comprising the steps of:

starting at an IDLE state, moving to a LINK_FAIL state;

downgrading a capability set while in the LINK_FAIL state; and

completing successful auto-negotiation thereby moving from the LINK_FAIL state to a LINK_PASS state.

16. A method for auto-negotiation comprising the steps of:

advertising a first highest common denominator of capabilities including a first subset of capabilities and a second subset of capabilities;

masking out the first subset of capabilities; and

advertising the second subset of capabilities.

17. The method for auto-negotiation of claim 16, wherein the first subset of capabilities include gigabit communications capability.

18. The method for auto-negotiation of claim 16, wherein the first subset of capabilities include 100 megabit communication capability.

19. The method for auto-negotiation of claim 16, wherein the first subset of capabilities are read from register 4.

20. The method for auto-negotiation of claim 16, wherein the second subset of capabilities are read from register 9.

21. A method for operating a pair of local area network devices to establish a link, the method comprising:

the pair of local area network devices determining a set of commonly supported operating parameters;

the pair of local are network devices attempting to establish a link according to the set of commonly supported operating parameters;

when the attempt to establish the link according to the set of commonly supported operating parameters fails, the pair of local area network devices determining a reduced set of commonly supported operating parameters; and

the pair of local are network devices attempting to establish a link according to the reduced set of commonly supported operating parameters.

22. A method for operating a pair of local area network devices to establish a link, the method comprising:

a first local area network device of the pair of local area network devices advertising a first local area network device set of supported operating parameters;

a second local area network device of the pair of local area network devices advertising a second local area network device set of supported operating parameters;

the first local area network device and the second local area network device negotiating a set of commonly supported operating parameters from the first local area network device set of supported operating parameters and the second local area network device set of supported operating parameters;

the pair of local are network devices attempting to establish a link according to the set of commonly supported operating parameters; and

when the attempt to establish the link according to the set of commonly supported operating parameters fails:

the first local area network device of the pair of local area network devices advertising a reduced first local area network device set of operating parameters;

the pair of local area network devices determining a reduced set of commonly supported operating parameters from the reduced first local area network device set of operating parameters and the second local area network device set of operating parameters; and

the pair of local area network devices attempting to establish a link according to the reduced set of commonly supported operating parameters.

23. A method for auto-negotiation comprising the steps of:

attempting to establish a link using a highest common denominator set of capabilities, the highest common denominator set of capabilities including a plurality of highest advertised capabilities; and

after failing to establish the link a predefined number of times, masking out the highest advertised capability that is not already masked out.

24. A method for auto-negotiation comprising the steps of:

masking out 100BASE-T functionality;

masking out 1000BASE-T functionality;

attempting to link using the highest common denominator, after masking out the 100BASE-T functionality and the 1000BASE-T functionality;

after failing to establish the link a predefined number of times, advertising all of the abilities in register 9.

25. A method for auto-negotiation comprising the steps of:

masking out 100BASE-T functionality;

masking out 1000BASE-T functionality;

attempting to link using the highest common denominator, after masking outthe100BASE-T functionality and the 1000BASE-T functionality;

after failing to establish the link a predefined number of times, advertising all of the abilities in register 4.

26. A method for auto-negotiation comprising the steps of:

establishing a link after auto-negotiation;

failing after establishing the link; and

advertising the capabilities of register 4 after the step of failing.

27. A method for auto-negotiation comprising the steps of:

establishing a link after auto-negotiation;

failing after establishing the link; and

advertising the capabilities of register 9 after the step of failing.

28. A method for auto-negotiation comprising the steps of:

generating first signals to advertise a first set of capabilities;

attempting to establish a link according to the first set of capabilities;

downgrading the first set of capabilities to a second set of capabilities;

transmitting second signals to advertise the second set of capabilities; and

establishing a link according to the second set of capabilities.

29. The method of claim 28, wherein the first signals, the second signals, the third signals and the fourth signals are fast link pulse signals.

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